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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,921	07/22/2003	Mark A. Bernick	2398-031312	7119

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EXAMINER	
MCDONALD, RODNEY GLENN	

ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/624,921	BERNICK, MARK A.	
	Examiner	Art Unit	
	Rodney G. McDonald	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-7,9,11-15,17 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *1-3,5-7,9,11-15,17 and 18* is/are allowed.

6)☒ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5-7, 9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (U.S. Pat. 5,944,968) in view of Masaki et al. (Japan 61-235560) and Nakazato et al. (U.S. Pat. 4,631,106).

.Regarding claims 1, 13, Kobayashi et al. teach a magnetron sputtering electrode for use with a magnetron sputtering device. (See Fig. 2) Kobayashi et al. teach a cathode body comprising a target 5. (See Fig. 2) Kobayashi et al. teach a rotary drive unit 814 coupled to the cathode body. (See Fig. 2; Column 3 lines 66-68; Column 4 lines 13-14) Kobayashi et al. teach a target 5 received by the cathode body. (See Fig. 2) Kobayashi et al. teach a closed magnet arrangement 4 received within a magnet receiving chamber and coupled to the drive unit 814 for motion relative to the target. (See Fig. 2; Fig. 3; Column 3 lines 63-68; Column 4 lines 1-7) Kobayashi et al. teach that the rotation can comprises two rotation degrees of freedom of movement about an axis. The degrees of freedom of movement being rotational and eccentric. (Column 3 lines 63-68; Column 4 lines 1-7)

Regarding claim 2, Kobayashi et al. teach that a plurality of magnets cooperate to generate magnet flux lines which form closed magnetic tunnels adjacent to the front surface of the target. (See Fig. 3)

Regarding claim 3, Kobayashi et al. teach that the target 5 can be circular. (See Fig. 3)

Regarding claims 5, 13, Kobayashi et al. teach that the drive unit is comprised of at least one drive shaft 811 and at least one motor 814 wherein the at least on drive shaft is coupled to the magnet assembly and the at least one motor 814 is coupled to the at least one drive shaft 811. (Column 3 lines 63-68; Column 4 lines 1-7)

Regarding claim 6, Kobayashi et al. teach that the at least one motor 814 causes the magnet arrangement to rotate about an axis 81A. (Column 3 lines 63-68; Column 4 lines 1-7)

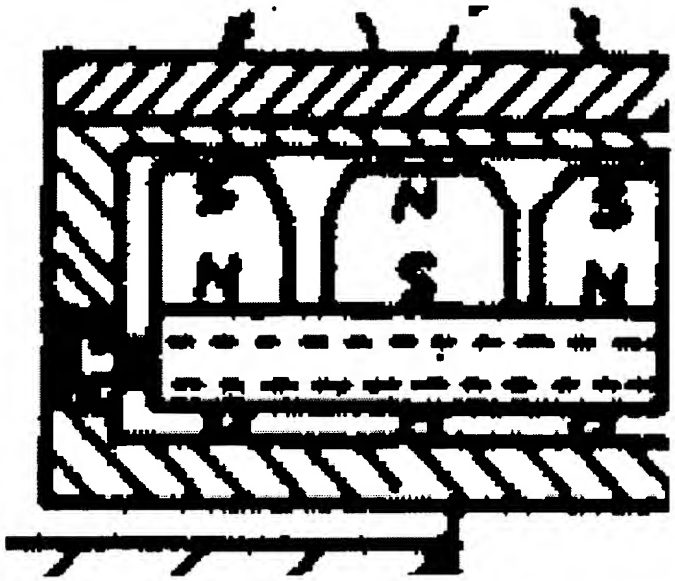
Regarding claim 7, Kobayashi et al. teach that the motion is one of concentric motion and eccentric motion. (Column 3 lines 63-68; Column 4 lines 1-7)

Regarding claim 11, Kobayashi et al. teach that the magnets can be rectilinear form. (See Fig. 3)

The differences between Kobayashi et al. and the present claims is that the moving magnets being profiled having a contoured top portion is not discussed (Claim 1), a support plate coupled to the drive unit is not discussed (Claim 1), the use of spacer blocks of non-magnetic material with the magnets not extending above the spacer blocks is not discussed (Claim 1), the use of a support plate having a plurality of

channels to support the magnets is not discussed (Claim 9) and the shape of the contoured top portion is not discussed (Claim 12).

Regarding the moving magnets being profiled having a contoured top portion of claim 1, Masaki teach a sputtering electrode in a sputtering chamber of Figure 1. (See Figure 1) The sputtering electrode comprises a cathode body 5. (See Figure 1) A drive unit –item 41 and screw conveyor is coupled to the cathode body 4. (See Figure 1) A target 3 is received by the cathode body 5. (Figure 1) A magnet arrangement 4 is received within a magnet receiving chamber of the cathode body 5 and is coupled to the drive unit – item 41 and screw conveyor. The magnet arrangement 4 is comprised of a plurality of magnets adapted for motion relative to the target by the drive unit. (See Figure 1; Abstract) The magnets form a closed loop arrangement for generating a closed loop on the target surface for sputtering material onto the surface of the substrate 6. (See Figures 1 and 3; Abstract) The magnets have profiled top portions with angled portions and flat apex. (See Figure 1; See enlarged Figure). The plurality of magnets are coupled to a support plate which is coupled to the drive unit – 41 and screw conveyor. (See Figure 1)



The motivation for utilizing a contoured magnet is that it allows for forming a film with good quality. (See Masaki Abstract)

Regarding a support plate coupled to the drive unit of claim 1, Masaki teach that the plurality of magnets are coupled to a support plate which is coupled to the drive unit – 41 and screw conveyor. (See Figure 1)

The motivation for utilizing a support plate is that it allows for holding the magnets for moving. (See Masaki Figure 1)

Regarding the use of spacer blocks of non-magnetic material with the magnets not extending above the spacer blocks of claim 1, Nakazato et al. in Fig. 8 shows utilizing non-magnetic spacer material between the magnets with the magnets not extending above the non-magnetic spacer material. (See Fig. 8; Column 6 lines 15-28)

The motivation for utilizing spacer material between the magnets is that it allows for suppressing the space required for movement of the magnetic means. (Column 2 lines 5-13)

Regarding the use of a support plate having a plurality of channels to support the magnets of claim 9, Nakazota et al. teach that magnets can be supported in channels of a support pate as shown in Figure 8. (Column 6 lines 15-41; Figure 8)

The motivation for supporting magnets in channels of a support plate is that it allows for spreading the magnets toward the periphery. (Column 6 lines 15-28)

Regarding the shape of the contoured top portion of claim 12, Masaki et al. teach that the contoured top portions of the magnet is one of angled shape or sloped shape. (See Figure 1)

The motivation for utilizing a contoured top portion is that it allows for forming a film with good quality. (See Masaki Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kobayashi et al. by utilizing a support plate and contoured magnets as taught by Masaki et al. and to have utilized spacer blocks of non-magnetic material with the magnets not extending above the spacer blocks and a support plate having a plurality of channels to support the magnets as taught by Nakazoto et al. because it allows for forming a film of good quality and spreading of the magnetic field over the target.

Claims 14, 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of Masaki et al. and Nakazato et al. as applied to claims 1-3, 5-7, 9 and 11-13 above, and further in view of Fukami et al. (Japan 61-041194).

The difference not yet discussed is where the apex is flat and wherein the apex is up to half the thickness of the magnet segment (Claims 14, 15).

Masaki et al. is discussed above already establishes the apex of the magnet being flat. (See Masaki discussed above) Fukami et al. teach that magnetic poles apexes should be up to half the thickness of the magnet segment. (See Figures 1, 2a, 2b; pole 8)

The motivation for utilizing an apex that is flat and up to half the thickness of the magnet segment is that it allows for accelerated depositing of a film. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have to have utilized an apex that is flat and a magnet that is up to half the thickness of the magnet segment as taught by Fukami et al. because it allows for uniformalizing the film thickness distribution and for accelerated depositing of a film.

Response to Arguments

Applicant's arguments filed 4-25-06 have been fully considered but they are not persuasive.

At the outset the Examiner notes that the claims have been amended to include the limitation wherein "two or more ***rotational*** degrees of freedom of movement" occur.

In response to the argument that the prior art of record does not teach the motion further comprising two or more ***rotational*** degrees of freedom of movement about an axis, newly cited reference to Kobayashi et al. suggest two rotational degrees of freedom of movement about an axis. This reference is cited to meet Applicant's new

claim limitation. Masaki et al. is still relied upon to teach contoured magnets which are capable of moving.

In response to the argument that the prior art of record does not teach eliminating the turnaround effect, it is argued that the combination of references would eliminated the turnaround effect since the combination of references suggest rotation and eccentric movement with the contoured profile of the magnets.

Conclusion

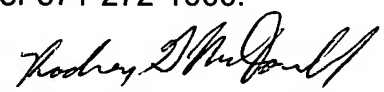
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
June 29, 2006